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patent identified below and further request that the patent be included in the interference requested with the '766 Patent.

II. The Request for Declaration of an Interference Under 37 C.F.R. § 1.607(a)

A. 37 C.F.R. § 1.607(a)(1) - Identity of the Intefering Patent

Applicant hereby notifies the PTO that they have presented Claims 56-65 in the present application for purposes of requesting an interference with U.S. Patent No. 6,090,489 to Hayakawa *et al.* ("the '489 Patent"). A copy of the '489 Patent is enclosed as Attachment C.

Newly presented Claims 56-65 correspond to Claims 1-3 and 14-20 of the '489 Patent which issued July 18, 2000. It should be noted that the term of the '489 Patent was disclaimed relative to an earlier patent (U.S. Patent No. 6,013,372) assigned to the same patentee (Toto, Ltd.). A copy of the '372 Patent is enclosed as Attachment D. This was done in response to an obviousness-type double patenting rejection made during the prosecution of the application for the '489 Patent in view of the claims of the '372 Patent. As indicated by the Examiner during the prosecution of the application for the '372 Patent, the same materials treated in the same manner will produce the same results. Furthermore, as correctly noted by the Examiner, water molecules would inherently be adsorbed onto the surface of a hydrophilic substrate when in an air atmosphere because of the presence of water vapor in air. Also, the hydrogen bond component and oil repellancy would inherently be enhanced. *See*, the Office Action mailed

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September 15, 1999, in U.S. Application Serial No. 09/091,692, which issued as the '372 Patent.

A copy of this Office Action is enclosed as Attachment E.

Thus, Toto, Ltd., the patentee of the '489 and '372 Patents admitted that these two patents claim the same invention. Accordingly, the '372 Patent should be included in an interference between the present application, the '766 Patent and the '489 Patent. In such an interference all of the claims of the '372 Patent should be designed as corresponding to the new proposed count attached hereto.

B. 37 C.F.R. § 1.607(a)(2) - Presentation of a Proposed Count

The interfering subject matter between the present application and the '489 Patent relates to depositing titanium oxide having a photocatalytically-activated, self-cleaning property on a glass substrate. This is the same interfering subject matter as between the present application and the '766 Patent which was the basis for the Request for Declaration of Interference filed September 14, 2000. *See*, page 11 of that Request.

Applicant again respectfully submits that an alternative claim format for the Count is appropriate. *Orikasa v. Oonishi*, 10 USPQ2d 1996 (Comm'r Pat. & Trademarks 1989).

Attachment B to the previous Request contained a proposed Count which represented the independent claims of both the present Application and the '766 Patent, *i.e.*, the independent

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claims reciting the method for manufacturing titanium dioxide coated substrates, the titanium dioxide coating being a photocatalytically-activated, self-cleaning surface. Applicants now propose a new Count which is equivalent to the Count proposed in the previous Request but includes the claims copied from the '489 Patent (all the claims copied from the '489 Patent are independent claims). Attachment E hereto shows the new proposed Count.

C. 37 C.F.R. § 1.607(a)(3) - Identification of Claims in the '489 Patent Corresponding to the Proposed Count

Applicant identifies Claims 1-3 and 14-20 of the '489 Patent as corresponding to the new proposed Count. Independent Claims 1-3 and 14-20 of the '489 Patent correspond exactly to alternatives of the proposed Count.

D. 37 C.F.R. § 1.607(a)(4) - Presentation of Claims Corresponding to the Proposed Count

Applicant has presented above new Claims 56-65 which correspond to the proposed Count.

E. 37 C.F.R. § 1.607(a)(5)(i-ii) - Application of New Claims to the Disclosure

Applicant identifies in Table II below exemplary support in the present application for new Claims 56-60.

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TABLE II

New Claims 56-65	Exemplary Support in the Present Application (U.S. Application Serial No. 09/662,181)
<p>56. A method for hydrophilifying the surface of a substrates comprising the steps of:</p> <p>providing a substrate coated with a solid layer having an interface with air, and containing a photocatalyst; and</p> <p>photoexciting the photocatalyst to permit molecules of water to be physically adsorbed onto the surface of said layer under the photocatalytic action of said photocatalyst, thereby hydrophilifying the surface of said substrate.</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"a titanium oxide coating was deposited on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-23)</p> <p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26)); "architectural glazing" (11:7); "The titanium oxide coatings may be produced with a high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>57. A method for hydrophilifying the surface of a substrate, comprising the steps of:</p> <p>providing a substrate coated with a solid layer having an interface with air, said layer containing a photocatalyst, and, at said interface, a hydrogen bond component, γ_s^h; and</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"a titanium oxide coating was deposited on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-23)</p>

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<p>photoexciting the photocatalyst to increase said hydrogen bond component under the photocatalytic action of said photocatalyst.</p>	<p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26); "architectural glazing" (11:7); "The titanium oxide coatings may be produced with a high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>58. A method for hydrophilifying the surface of a substrate, comprising the steps of:</p> <p>providing a substrate coated with a solid layer having an interface with air, said layer containing a photocatalyst, and having, at said interface, a hydrogen bond component, γ_s^h; and</p> <p>photoexciting the photocatalyst to increase said hydrogen bond component under the photocatalytic action of said photocatalyst, thereby accelerating the physical adsorption of molecules of water onto the surface of said layer.</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"a titanium oxide coating was deposited on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-23)</p> <p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26)); "architectural glazing" (11:7); "The titanium oxide coatings may be produced with a high refractive index (at least 2, 4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>59. A method for enhancing the oil repellency of the surface of a the substrate in water, comprising the steps of:</p> <p>providing a substrate coated with a solid layer having an interface with air, and containing a photocatalyst; and</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"a titanium oxide coating was deposited on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-</p>

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<p>photoexciting the photocatalyst to increase a hydrogen bond component, in the surface energy in the solid/gas interface of said layer under the photocatalytic action of said photocatalyst, thereby enhancing the oil repellency of the surface of the substrate when placed in water.</p>	<p>23)</p> <p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26)); "architectural glazing" (11:7); "The titanium oxide coatings may be produced with a high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>60. A method for cleaning a substrate, comprising the steps of:</p> <p>providing a substrate coated with a solid layer having an interface with air, and containing a photocatalytic semiconductor material;</p> <p>photoexciting the photocatalyst to enhance a hydrogen bond component, γ_s^h, in the surface energy in the solid/gas interface of said layer under the photocatalytic action of said photocatalyst, thereby enhancing the oil repellency of the surface of the substrate when placed in water; and immersing the substrate in water or wetting the substrate with water to release an oil stain adhering on the surface of the substrate.</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"a titanium oxide coating was deposited on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-23)</p> <p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26)); "architectural glazing" (11:7); "The titanium oxide coatings may be produced with a high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>61. A composite with a hydrophilifiable surface, comprising:</p> <p>a substrate;</p> <p>a solid layer provided on the surface of the</p>	<p>"This invention relates to a process for depositing titanium oxide ... coatings on a flat glass substrate, and the resulting coated glass" (1:8-10)</p> <p>"flat glass substrate" (1:8-9)</p> <p>"a titanium oxide coating was deposited</p>

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<p>substrate and having an interface with air, said layer containing a photocatalyst; and</p> <p>a layer of molecules of water physically adsorbed onto the surface of said layer containing a photocatalyst in response to the photoexcitation of the photocatalyst.</p>	<p>on the ... substrate" (Example 1 (17:1-2)); <i>see</i>, also Fig.2 ("titanium oxide coating 62 on top of the article" (22:21-23))</p> <p>"The optical properties of the resulting coated stack included" (Example 7 (22:25-26)); "architectural glazing" (11:7); "The titanium oxide coatings may be provided with a high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>62. A composite with a hydrophilifiable surface, comprising:</p> <p>a substrate; and</p> <p>a solid layer provided on the surface of the substrate and having an interface with air, said layer containing a photocatalyst and adapted to increase the hydrogen bond component, γ_s^h, in the surface energy at said interface in response to the photoexcitation of said photocatalyst.</p>	<p>"depositing titanium oxide ... coatings on a flat glass substrate and the resulting coated glass" (1:8-10)</p> <p>"flat glass substrate"(1:8-9)</p> <p>"titanium dioxide coatings" (7:19-20); <i>see</i>, the interface with air of TiO₂ layer 62 shown in Fig. 2; "high refractive index (at least 2.4) permitting the achievement of desired optical effects" (22:25-26); "architectural glazing" (11:7)</p>
<p>63. A composite with a hydrophilifiable surface, comprising:</p> <p>a substrate;</p> <p>a solid layer provided on the surface of the substrate and having an interface with air, said layer containing a photocatalyst and adapted to increase the hydrogen bond component, γ_s^h, in the surface energy at said interface in response to photoexcitation of said photocatalyst; and</p>	<p>"depositing titanium oxide ... coatings on a flat glass substrate and the resulting coated glass" (1:8-10)</p> <p>"flat glass substrate" (1:8-9)</p> <p>"titanium dioxide coatings" (7:19-20); <i>see</i>, the interface with air of TiO₂ layer 62 shown in Fig. 2; "high refractive index (at least 2.4) permitting the achievement of desired optical effects" (22:25-26) "architectural glazing" (11:7)</p>

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<p>a layer of molecules of water physically adsorbed onto the surface of said layer containing a photocatalyst in response to the photoexcitation of the photocatalyst.</p>	<p>"The optical properties of the resulting coated stack include" (Example 7 (22:25-26)); "architectural glazing" (11:7); "high refractive index (at least 2.4) permitting the achievement of desired optical effects" (10:30-11:2)</p>
<p>64. A composite with a surface adapted to be rendered oil repellent in water, comprising:</p> <p>a substrate;</p> <p>a solid layer provided on the surface of the substrate and having an interface with air, said layer containing a photocatalyst and adapted to increase the hydrogen bond component, γ_s^h, in the surface energy at said interface in response to photoexcitation of said photocatalyst, thereby increasing the oil repellency of the surface of the composite in water.</p>	<p>"depositing titanium oxide ... coatings on a flat glass substrate and the resulting coated glass" (1:8-10)</p> <p>"flat glass substrate" (1:8-9)</p> <p>"titanium dioxide coatings" (7:19-20); <i>see</i>, the interface with air of TiO₂ layer 62 shown in Fig. 2; "high refractive index (at least 2.4) permitting the achievement of desired optical effects" (22:25-26); "architectural glazing" (11:7)</p>
<p>65. A composite with an easily cleanable surface, comprising:</p> <p>a substrate; and</p> <p>a solid layer provided on the surface of the substrate and having an interface with air, said layer containing a photocatalyst, said layer operating to increase the hydrogen bond component, γ_s^h, in the surface energy at said interface in response to photoexcitation of the photocatalyst, thereby enhancing the oil repellency of the surface of the composite in water, whereby, upon immersion of the composite in water or wetting of the composite with water, an oil stain adhering on the surface of said layer is released therefrom.</p>	<p>"depositing titanium oxide ... coatings on a flat glass substrate and the resulting coated glass" (1:8-10)</p> <p>"flat glass substrate" (1:8-9)</p> <p>"titanium dioxide coatings" (7:19-20); <i>see</i>, the interface with air of TiO₂ layer 62 shown in Fig. 2; "high refractive index (at least 2.4) permitting the achievement of desired optical effects" (22:25-26) "architectural glazing" (11:7)</p>

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F. 37 C.F.R. § 1.607(c) - Identification of Corresponding Claims in the '489 Patent

Applicant has presented claims which correspond to claims of the '489 Patent. Applicant identifies below these claims as well as the number of the corresponding '489 Patent claims.

Newly Presented Claims	Corresponding claims of the '766 Patent
56	1
57	2
58	3
59	14
60	15
61	16
62	17
63	18
64	19
65	20

IV. Benefit Dates

In an interference between the present application and the '489 Patent, Applicant should be accorded benefit of the filing date of parent application Serial No. 09/199,539 filed November 25, 1998, as well as grandparent application Serial No. 08/696,203 filed August 13, 1996. The present application is a continuation under Rule 53(b) of the '539 Application which is a

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continuation of the '203 Application, and thus the present application contains the same disclosure as the '539 and '203 Applications.

The '489 Patent was filed June 19, 1998, and does not claim benefit of the filing dates of any earlier application.

Hence, in an interference between the present application and the '489 Patent, Applicant (McCurdy) should be designated senior party and Hayakawa *et al.*, the patentee of the '489 Patent, should be designated junior party.

V. Designation of Claims

Claims 1-29 of the '489 Patent should be designated as corresponding to the new proposed Count since they all define the same patentable invention as the new proposed Count.

Similarly, all of the claims pending in the present application including the new claims added in the present Supplemental Preliminary Amendment and Rule 607 Request (Claims 56-65) should be designated to corresponding to the new proposed Count since they also all define the same patentable invention as the new proposed Count.

As noted in the previously filed Request for Declaration of Interference, Applicants filed a continuation application of the parent '539 Application on September 7, 2000, containing the allowed claims of the '539 parent application, *i.e.*, Claims 4, 6-7 and 32-41. *See*, the Notice of Allowance and Issue Fee Due and Notice of Allowability mailed June 15, 2000, in the '539

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Application. Allowed Claims 4, 6-7 and 32-41 of the '539 Application all recite a precursor gas mixture containing titanium tetrachloride and an ester, the ester having an alkyl group with a β hydrogen. As recognized in the Examiner's Statement of Reasons for Allowance included in the Notice of Allowability in the '539 Application, the prior art does not teach or suggest forming a titanium oxide coating using such an ester.

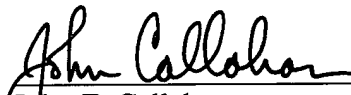
Applicant has filed an Information Disclosure Statement bringing to the Examiner's attention documents that may be relevant. In that Information Disclosure Statement, the Examiner's attention was directed to the continuation application filed September 7, 2000. Applicant again respectfully submits, however, that Claims 4, 6-7 and 32-41 presented for examination in the continuation application filed September 7, 2000, should not be included in the interference and, specifically, should not be designated as corresponding to the new proposed count. This is at least because of the feature of the invention recited in those claims relating to the ester having an alkyl group with a β hydrogen.

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VI. Conclusion

Applicant has copied claims from two U.S. patents, *i.e.*, the '766 Patent (*see*, the previous Request) and now the '489 Patent. Applicant requests that an interference be declared between the present application and the '766 and '489 Patents using the new proposed count and with the claim designations identified herein.

Respectfully submitted,



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